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STUDIES IN VICTORIAN VEGETATION

1. Computer Sorting of Plant Associations in the Northern Brisbane Ranges

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Abstract: Computer techniques for sorting vegetation data into plant associations have been applied to the open-forest of the northern Brisbane Ranges. Data were collected by a large group of field investigators, which provided a rapid means of collecting samples from a wide range of plant communities.

Two plant associations form the major area of vegetation in the Brisbane Ranges—the Xanthorrhoeo-Platylobietum and the Eucalypto-Acacietum pycnanthae. Both associations have a number of sub-associations and variants. Such vegetation variation is related, in the first instance, to edaphic and climatic factors.

INTRODUCTION

The Brisbane Ranges rise sharply to 470 m at the west of the volcanic plains between Melbourne, Geelong and Bacchus Marsh. The range divides about the tributaries of the Little River into northern and southern halves. This article deals with vegetation of the ridges and hill tops north from Reillys Creek.

Seven *Eucalyptus* species are found as constituents of the vegetation: *E. baxteri*, *E. dives*, *E. goniocalyx*, *E. macrorhyncha*, *E. obliqua*, *E. polyanthemos*, *E. sideroxylon*, with *E. ovata* occurring in occasional pockets near watercourses. Following the structural classification of Specht (1970), the vegetation falls largely into the open-forest category. With such a range of tree species, appearing at times almost randomly mixed, classification of this vegetation as one category is unsuitable, particularly if more detailed studies are envisaged.

Frankenberg (1971) lists three sub-alliances for her alliance described as 'Red Stringybark-Red Box-Peppermint', which would presumably include the vegetation of this area. With such reliance solely on *Eucalyptus* species as ecological indicators, this classification may also be regarded as inadequate. Such a complex mixture seemed an ideal testing ground for a more detailed application of the Zurich-Montpellier system (Bridgewater 1971).

Computer programs capable of rapid handling of large data sets have been written by the author, and modified by Mr. J. R. Busby, for a Burroughs B5500/B6700 computer. In this way, many of the tedious processes associated with hand-sorting a large data set are removed. All the vegetation data were collected by a field group of the Monash University Biology Society. This exercise was a pilot attempt to see if data could be quickly culled and analysed from an area. Such data are easily held in a bank for use in further ecological/land-use studies.

The collected data have been treated in two ways: firstly to provide an 'overview' of the vegetation trends in this area, and secondly as a basis for the floristic description of plant associations in Victoria—and the rest of Australia. Future papers in this series will deal with coastal heathland, saltmarsh and temperate rainforests.

DATA COLLECTION

All data from vegetation samples were recorded on cards printed with a numbered list of species likely to be found in the area. Data were then transferred to computer punch cards for processing. No samples were taken close to

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watercourses, so vegetation associated with *E. ovata* is unrepresented.

Sample sites were selected to include as wide a range of physiognomically different vegetation as possible, within the area. Samples were generally taken in areas of homogeneous, or undisturbed, vegetation (Bridgewater 1971), but some areas which appeared ecotonal, or gradal, were sampled as well, in an attempt to gauge the vegetation variation.

An initial computer program (INDATA/CHECK) was used to print out the samples as they are encoded on the punch cards, and also to calculate the frequency of each species occurrence. This allows for easy checking of coded data against the field records for any coding errors.

DATA SYNTHESIS

A number of programs appear in the literature which attempt to simulate the processes of the Z-M system (e.g. Moore et al. 1970, Ceska & Romer, 1971). Both of these were written for IBM machines, and are not suitable to take advantage of the large processing facility offered by the Burroughs machine.

The principles on which the programs operate are similar, and formed the basis for the operations of the Monash program (ZUMONT/SORT). This program attempts to detect species/relieve coincidences and operates in the following way. It initially searches for all those species which occur in 15 to 70 per cent of the samples under consideration. Species which fall between these limits are those which would be 'potential differential species' (PDS) (Bridgewater 1971). The PDS with the greatest number of occurrences is selected and all the samples in which it occurs are found. The remaining PDS are scanned and those which occur in at least 50% of these samples are selected. If none can be found then the first species is printed out as a 'single species' and is not considered further in the analysis. The PDS with the next highest number of occurrences is then selected and the process is repeated until all the PDS are rejected or a suitable species group is found. If such a group is found the samples involved are then scanned to ensure that each sample contains at least 50% of the selected PDS. Those which do not contain 50% are rejected. If no samples are rejected then this group is printed out and the PDS in this group are not considered in subsequent calculations. Of the remaining PDS the one with the highest number of occurrences is selected and the process is repeated. If some samples are rejected then the PDS are scanned again and those eligible PDS which occur in at least 50% of the remaining samples are selected. If there is no change in the number of PDS then the group is printed out. If there is a change in the number of PDS then the samples are scanned again as above. This sorting of samples and species within the one group can be repeated for up to 20 times before being automatically terminated. Calculations proceed until all PDS are printed as 'single species' or members of a group. Finally all those samples which contain species groups are printed out with the numbers of the species groups which they contain.

A third program (ZUMONT/PRINT) allows a full table to be printed by the computer, with the order of species and vegetation samples determined by the operator. Initially the order will be that suggested by the results of ZUMONT/SORT, with the order subsequently decided by the operator in the same way that he would reorder a hand sorted table. The important feature is that the raw data are used at each stage, minimizing the possibility of error.

TABLE 1

SPECIES GROUPS GENERATED BY ZUMONT/SORT

1. *Eucalyptus sideroxylon*
   Eucalyptus macrorhyncha
   Acacia pycnantha
   Haloragis tetragyna
   Dianella revoluta
   Cladia aggregata
   Xanthorrhoea australis
2. *Platysace lanceolata*
   Helichrysum obcordatum
3. *Pultenaea gunnii*
   Epacris impressa
   Stypandra caespitosa
   Campylopus introflexus
   Acrotriche serrulata
   Tetratheca ciliata
4. *Eucalyptus polyanthemos*
   Veronica perfoliata
5. *Eucalyptus goniocalyx*
   Danthonia pallida
   Hypnum cupressiforme
6. *Acacia mitchellii*
   Pimelea humilis
   Grevillea steiglitziana
   Platylobium obtusangulum
   Lepidosperma laterale
   Hakea sericea
   Eucalyptus baxteri
7. *Parmelia* spp
   Caladenia carnea
8. *Tetratheca ericifolia*
   Leucopogon virgatus

TABLE 2
FINAL TABLE OF ALL VEGETATION SAMPLES, PRODUCED BY PROGRAM ZUMONT/PRINT.
See text for details of the sample groups.

SAMPLE GROUP	I	II	III	IV	V	VI	VII
(samples)	0046 0042 0047 0002 0066 0067 0068 0069 0070 0071 0044 0043 0045 0048 0041 0038 0040 0039	0052 0053 0054 0001 0004 0059	0060 0062 0065 0026 0007 0003 0057 0058 0064 0063 0061 0037 0056 0051 0055	0005 0008 0025 0018 0006 0023 0024 0027 0011 0021 0032 0022 0020	0033 0034 0031 0030 0029	0016 0035 0019 0010 0017 0028	0013 0009 0012 0014 0036 0049 0015
EUCALYPTUS OIVES	3 3 + 3 3 + +		+ 2 2			3	2 2
MONOTOCA SCOPARIA	+ 4 2 2 + + +	3 +		+		+ +	2 2 + +
ISOPOGON CERATOPHYLLUS	+ +						
PULTENAEA HUMILIS	+ 2 3 + 2 2						
HIBBERTIA ACICULARIS	2 + +		2	+ 4 + 2 4			+
CASSYTHA GLABELLA	+						+
LEUCOPOGON ERICIOIDES	+ + + 2 2						
CLADONIA SPP.	+ + + 2 +	+	2 2 + 3 2	2 +			
EUCALYPTUS OBLIQUA	+						
BANKSIA MARGINATA	+ 2 2						
GOMPHOLOBIUM HUEGELII	4 2						
DAVIESIA VIRGATA	2 2 3 3 3		+	+ + +			+
STACKHOUSIA VIMINEA	2 2		4				
CORREA REFLEXA	2 2 3 3 +						4
PULTENAEA PEDUNCULATA	3 + + 2 2 + 3 + +						
COMESPERMA VOLUBILE	+ + +						
HELICHRYSUM SCORPIOIDES	+ + + + + +	+	+ +	2 + + +		2 + +	+ +
HAKEA SERICEA	2 4 + 2 3 3 2 + 2 2 3 4 + 2	+	3			3	+ 3 3
ACACIA MITCHELLII	+ 2 2 3 2 2 + + +	2	+			2	+ + +
PIMELEA HUMILIS	3 2 2 2 2 2 + 2 2 2 2	2		2			+ +
GREVILLEA STEIGLITZIANA	2 3 3 + 2 2 + + 3 2		+	2		3 2	2 2
LEPIDOSPERMA LATERALE	+ + + 2 3 2 2 3 2 + 3 2	+					2
ACROTRICHE SERRULATA	2 + 3 2 + 2 3 3	+ 2 3	2 + + +	+ + 2	2		+
TETRATHECA CILIATA	+ + + + + + 2 + + 2 2 +	2 2 2 +	2 +				+
XANTHORRHOEA AUSTRALIS	4 5 4 4 4 2 4 3 3 4 4 4 3 4 3 3 3	4 2 4 5	5 3 2 2 4 3 3 4 2 4	+		4	3 3 2
EUCALYPTUS BAXTERI	4 4 3 4 2 2 2 3 3 4 2 4 4 3 3	2 3					
PLATYLOBIUM OBTUSANGULUM	+ 2 2 + + + + + 2 2 + 2 2 3 2	+ +					3 +
LEUCOPOGON VIRGATUS	+ + 2 2 + 2 3 2 + 2		+			2	2 +
EPACRIS IMPRESSA	+ + 2 + + + 2 2 2 + + +	2 2 2	2 2 2 2 2	3		+ 2	2 + + + +
CAMPYLOPUS INTROFLEXUS	2 3 + + + + 2 2 +	2 3 3	2 2 3 2 + 4 3 + +	2 2 4 3 3 2	3		
STYPANDRA CAESPITOSA	+ + + 2 2 + 3 3 3	+ + +	+ 2 + 3 + + 3	+		2 + +	2 +
PULTENAEA GUNNII	+ 2 + + +	2 2 4 3	3 3 2 3 + 3 2				+ 4 +
GERANIUM MOLLE			+ 2 2				
STICTA SP.			+				
LUZULA CAMPESTRIS			2 + 2				
THUIDIUM FURFUROSUM			+ 3				
PLANTAGO VARIA		3 3 +	2 2 2 + 3 3 2				
POLYTRICHUM JUNIPERINUM		+	2 +				
WAHLENBERGIA GRACILENTA	+ 2	+	+ + + 2 2 3				
BRYUM BILLARDIERI			2 2				
EUCALYPTUS GONIOCALYX	+ 3	2	2 3 3 3 4 3 3 2 2 3 2 + 3 4 3		3	3 +	
DANTHONIA PALLIDA			2 2 2 4 + + 4 3 4 3 3			+ +	+ 3 3
HYPNUM CUPRESSIFORME	+	+	2 2 2 2 4 2 3 2 3 + 3	3 3 2	3	4	
EUCALYPTUS POLYANTHEMOS			2 3 + 3 3 3	3 + + 4 3 3 2 2 3 3 + 3	+	+	+
VERONICA PERFOLIATA			3	3 3 2 3 3 2 3 + 3 + 3 2		+ 3	
PARMELIA SPP.	+	+	+ 3	3 2 2 3 2 + + +	2 +	3 +	2
CALADENIA CARNEA		+ +		2 + + + + + + + +		+ +	+
DODONAEA CUNEATA				3	2 4		
PROSTANTHERA DECUSSATA					4 3 4 2		
BRACHYLOMA DAPHNOIDES				+ 2 + +	3 2 2		
PHEBALIUM LAMPROPHYLLUM					+ 3 +		+
BORONIA ANEMONIFOLIA					4 3		
PLATYSACE LANCEOLATA	+ + + + + + + +	2	2 + 2	3 3 2 2 3 4 R 2 3 + 3 2	3 3 2 3 +		+ + 2
HELICHRYSUM OBCORDATUM	+ + + 2 4 3			3 3 3 3 + 5 4 +	5 3 + 4 2	+	+ 2
EUCALYPTUS SIDEROXYLON		2 2 2 3	3 3 3 4 4 5 4 3 4 3	3 4 4 4 4 3 3 3 3 3 3 4	3 3 4 4 4	+ + + 2 3	3
ACACIA PYCNANTHA	+ +	+ 3	2 3 3 3 2 3 3 + 2	+ 3 2 3 3 2 + 3 3 +	4 2 4 2	3 + 3 + 3	+
EUCALYPTUS MACRORHYNCHA	4 3 3 3	2 3 2 3 3 3	2 + 2 4 2 2 2 3 3 4 3 3 3	3 + 4 4	3 2 +	4 4 + 3 3	3 3 4 3 3 +
HALORAGIS TETRAGYNA	+ + + 3 + 2 + + + + 2 + + +	2 2 2 + 3	2 2 2 + + 2 2 3 2 2	3		4 + + +	2 +
DIANELLA REVOLUTA	+ + + 2 + + 2 2 + + 2 + +	2 + + +	+ + + + +	+ 2 2 + 3 3 + 2	+ + 2	+ 2 +	+ + +
CLADIA AGGREGATA	+ 4 5 + 4 + 4 + 2 + 4 4 + 3	3 + 4 + 3	2 2 3 3 3 + + 2 3 4 3 2 2	2 3 3 2 2 4 + 3 3	2 4 4 +	3 3	3
POA AUSTRALIS	+ 2 + + 3 2 2 + 3 3 + 3 3 4 3	2 3 2 2 2 3	3 + 3 + + + 3 2 3 + 4	3 3 + 2 3 + 2 3	3 3	2 3 3 2 4	+ 3 3 +
TETRATHECA ERICIFOLIA	+ + + + + + 2 3 +						+ + +
ACACIA OXYCEDRUS	+ 2 3						+
LEPTOSPERMUM MYRSINOIDES	+ 2 + +	+ +					+
LEPTOSPERMUM JUNIPERINUM	+	2					
HOVEA HETEROPHYLLA	+ + + 2 + + 2	+	2				+
CORREA REFLEXA	+ + 2 +	+ +	+	+			
DROSERA WHITTAKERI	2 3 2 3 2 2 ~	3 2 2 5	3 2 2 2 2	+			2 2 +
DILLWYNIA GLABERRIMA	+ 2	+		+ 2 3 +	2		2 2 +
SENECIO QUADRIDENTATUS		+ + +	2 + + + 3 2 + 2	2 + +		+ 3	
ACACIA ASPERA			3	+ 4 +	5 4	4 + +	3 3
ACACIA ACINACEA	+	+	2 + 2 3			3 + +	
ACACIA ACULEATISSIMA	+ +					+	
BAECKEA RAMOSISSIMA		2	+		+ +		+ 3
MARIANTHUS PROCUMBENS	2	+		+ +			2 +
RHAGODIA HASTATA	+			+ + +		2 +	+
PTEROSTYLIS SPP.		+ +	2	3 2			
CALANDRINIA CALYPTRATA			+ + +	2			
CARPOBROTUS ROSSII				2 + +		+	
CASSINIA LONGIFOLIA		+ +		+ + 3 + 2 3		3	
DROSERA PLANCHONII	+	2 +	2	+ +			+
PULTENAEA DAPHNOIDES			+ +				+
DROSERA AURICULATA	+ + +	2 2	+			+	+
DILLWYNIA CINERASCENS	+						+ +
ASTROLOMA HUMIFUSUM	+		2 +	3 4	2	3	
LIVERWORT			+				
CF BREUTELIA		3 2 4	3 2 2 2				
AIRA CARYOPHYLLEA	2					4	
PTEROSTYLIS PARVIFLORA			2		+		
THELYMITRA PAUCIFLORA	+				+		
PIMELEA LINIFOLIA		+	+ +		+	+	
ACACIA MYRTIFOLIA	+		+			2	+
GOODENIA LANATA		+	2 + 3				+
DILLWYNIA SERICEA	+ + +	+	2 +				
LEPIDOSPERMA FILIFORME	+ 2 2 + 2		+				
BRACHYCOME CILIARIS	4 4 3 3						
HIBBERTIA FASCICULATA	+						
BURCHARDIA UMBELLATA	+ + + + + +		+ +				
ACACIA GUNNII			2 2 2 2 2				
PTYCHOMNION ACICULARE	+ + +	2	2				
CRASPEDIA GLAUCA			3 2				
ACAENA ANSERINIFOLIA	+	+	+ 2 3				
PELARGONIUM RODNEYANUM			2 2				
PTERIDIUM ESCULENTUM			2 2				
STELLARIA MEDIA			+ +				
OXALIS CORNICULATA			+				
LOPHOCOLEA SEMITERES	+						
DAVIESIA ULICIFOLIA	+ +						
STYLIDIUM GRAMINIFOLIUM							

Listings of the three programs described here are available on application to the author.

RESULTS

Some 70 samples were obtained from the Brisbane Ranges, involving 110 species. The program ZUMONT/SORT produced eight species groups, including 28% of the species found. Table 1 lists these eight groups, which formed the basis for a first table. Two additional sorts were performed on the data, and these results are shown as Table 2.

This table is useful in that all the collected data are shown, and the floristic relationship of all the samples can clearly be seen. A group of species (*E. macrorhyncha*, *Haloragis tetragyna*, *Dianella revoluta*, *Cladia aggregata*, and *Poa australis*) extend through the range of samples. Most species, however, are concentrated in distinct groups of samples, or have only a few scattered occurrences.

The samples fall into seven major groups, each identified by a distinct group of species. The simple environmental notes gathered on the recording cards, together with information on soil characteristics, allow a simple picture of vegetation-environment relationships to be built up, as a prelude to a more detailed investigation.

Sample group I occurs on the highest parts of the ridge plateau, and corresponds fairly closely to the occurrence of a deposit of Sandringham Sand, overlaying the Ordovician shales and sandstones that make up the rest of the range. As might be expected, many of the species that identify these samples as a separate group are common to coastal heathland and heathwoodland situations. It is interesting to note the major area of occurrence of *Grevillea steiglitziana*, a species endemic to the range, is within the area of this group of samples.

Sample group II is transitional between groups I and III, with the soils often being duplex in nature. Group III, with an abundance of bryophytes and herbaceous plants, comprise samples found on the south facing slopes, where conditions are likely to be colder and wetter than north facing slopes. Group IV occurs on the north facing ridges, and at the northern end of the ridge plateau, whereas group V is located down slope in north facing gullies on the northern half.

Groups VI and VII are both small aggregations of samples, which do not appear to be identified by distinct species groups. They may represent transitional areas, or vegetation that was undersampled.

The species groups which identify these sample groups are quite distinct, although fractions of some groups may serve as differential species to sub-groups of other sample groups. For example, *Epacris impressa*, *Campylopus introflexus*, *Stypandra caespitosa* and *Pultenaea gunnii*—all identifying species for sample group I—act as differentiating species for one of two sub-groups in sample group III. This is a working example of the modern view of species 'fidelity', propounded by Ellenberg (1960).

Group I is seen to be highly variable, and possibly undersampled, whereas groups III, IV and V appear less variable, and are probably represented by sufficient samples.

The segregation of *Eucalyptus* species in the table is quite revealing. Whilst some definite associations can be found (particularly *E. macrorhyncha-E. sideroxylon*), an appraisal of the vegetation using all the species present shows the patterns established by *Eucalyptus* less useful. *E. polyanthemos*, for example, whilst forming one of the identifying species for group IV, acts as only a differential species for a sub-group of group III. When the distribution of all the species is considered, however, all the ambiguities disappear.

Thus far, the results have been considered using all samples collected, viewed together as a vegetation system for this particular locale. The other aim of this exercise was to make a step in establishing a basis for description and classification of floristic associations. Two associations have been derived from the data, and are shown in Tables 3 and 4. One corresponds to sample group I, the other is formed from groups III, IV and V. Because only the species occurring in the associations are shown in the tables, they have greater clarity than the table including all the samples.

Both these tables have been prepared using the raw data and the computer program ZUMONT/PRINT, which will print out small sections of the data as directed by the operator.

Nomenclature of plant associations can be a stumbling block. The standard combination of a physiognomically dominant species and a 'characteristic' species to name an association is followed here, as the resulting names are quite descriptive of the vegetation. Vegetation of Table 2 would become the Xanthorrhoeo-Platylobietum, with Table 3 the Eucalypto-Acacietum pycnanthae. Both of these associations have further sub-divisions, discussed below.

These associations have been formed without including dubious, or apparently transitional vegetation samples (group II, VI and VIII). Such samples are not discarded but stored for

TABLE 3

ASSOCIATION TABLE OF THE XANTHORRHOEO-PLATYLOBIETUM, PRODUCED BY PROGRAM ZUMONT/PRINT

SAMPLE NO.	00046	00067	00047	00002	00042	00066	00069	00068	00070	00071	00044	00048	00043	00045	00041	00038	00040	00039
EUCALYPTUS MACRORHYNCHA	4	3	3	3														
PLATYSACE LANCEOLATA	+	+	+	+	+							+	+	+				
EUCALYPTUS OIVES			3	+	3						3	+	3					+
MONOTOCA SCOPARIA	+		4	2							2	+	+	+				
ISOPOGON CERATOPHYLLUS						+									+			
PULTENAEA HUMILIS						+					2	2	3	+		2		
HIBBERTIA ACICULARIS											2		+	+				
CASSYTHA GLABELLA														+				
LEUCOPOGON ERICIOOES		+	+						+	2	2							
CLAOONIA SPP.	+						+				+		2	+				
EUCALYPTUS OBLIQUA						+												
BANKSIA MARGINATA			2		+						2							
GOMPHOLOBIUM HUEGELII							4				2							
OAVIESIA VIRGATA				2											2	3	3	3
STACKHOUSIA VIMINEA															2	2		
CORREA REFLEXA									2	2	3	3			+			
PULTENAEA PEOUNCULATA						3			+	+	2	3	2	+			+	+
COMESPERMA VOLUBILE															+	+	+	
HELICHRYSUM SCORPIOIOES						+	+								+	+	+	+
HELICHRYSUM OBCOROATUM			+									+			+	2	4	3
HAKEA SERICEA	2	3	+	2	4	3	+	2	2	2	3	2	4	+				
ACACIA MITCHELLII	+				2	2		3	2	2	+	+	+					
PIMELEA HUMILIS		2				3	2	2	2	2			+		2	2	2	2
GREVILLEA STEIGLITZIANA		3		2		3	+		2	2	+			+	3	2		
LEPIOOSPERMA LATERALE		+	+			+	3	2	2		2	+	3	2	3	2		
ACROTRICHE SERRULATA		+				2		3				2			+	2	3	3
TETRATHECA CILIATA	+			+	+	+			+	+	2	+		+	2	2	+	
XANTHORRHOEA AUSTRALIS	4	2	4	4	5	4		4	3	3	4	3	4	4	4	3	3	3
EUCALYPTUS BAXTERI		3			4	4	2	4	2	2	3	2	3	4	4	4	3	3
PLATYLOBIUM OBTUSANGULUM	+	+			2	2		+	+	+	+	+	2	2	2	2	3	2
LEUCOPOGON VIRGATUS			+	+		2			2			2	+		3	2	+	2
EPACRIS IMPRESSA	+	+	+	2		+		+	2	2		2			+	+	+	
CAMPYLOPUS INTROFLEXUS					2	3	+				+	+	+		2	2	+	
STYPANORA CAESPITOSA	+				+	+						+	2	2	3		3	3
TETRATHECA ERICIFOLIA	+		+	+		+			+					+		2	3	+
HALORAGIS TETRAGYNA	+	+	+		+	3	+	2	+	+		+	+	2	+		+	
OIANELLA REVOLUTA		+	+	+	+	2		+	2	2		+			+	2	+	+
CLAOIA AGGREGATA	+	+	5	+	4	4	+	4	2	+	4	3	4	+				
POA AUSTRALIS				2	+	+	3	+	2	2	+	+	3	3	3	3	4	3
PULTENAEA GUNNII	+			2								+	+		+			
HOVEA HETEROPHYLLA				+	+	+						+		2			+	2
LEPTOSPERMUM JUNIPERINUM													+					
LEPTOSPERMUM MYRSINOIOES	+										2		+	+				
ACACIA OXYCEORUS	+		2									3						
CORREA REFLEXA		+				+		2		+								
OROSERA WHITTAKERI		2		2		3	2	3		2								
WAHLENBERGIA GRACILENTA									+	2								
BRYUM BILLAROIERI																		
EUCALYPTUS GONIOCALYX			+													3		
HYPNUM CUPRESSIFORME											+							
PARMELIA SPP.				+														
ACACIA PYCNANTHA				+					+									
OILLWYNIA GLABERRIMA				2	+													
ACACIA ACINACEA													+					
ACACIA ACULEATISSIMA				+												+		
MARIANTHUS PROCUMBENS				2														
RHAGOOIA HASTATA				+														
OROSERA PLANCHONII						+												
OROSERA AURICULATA		+		+											+			
OILLWYNIA CINERASCENS			+															
ASTROLOMA HUMIFUSUM															+			
AIRA CARYOPHYLLEA	2																	
THELYMITRA PAUCIFLORA															+			
ACACIA MYRTIFOLIA																+		
OILLWYNIA SERICEA			+								+	+						
LEPIOOSPERMA FILIFORME							+		2	2	+				2			
BRACHYCOME CILIARIS			4		4						3	3						
HIBBERTIA FASCICULATA											+							
BURCHAROIA UMBELLATA		+	+			+					+		+	+				
ACACIA GUNNII																		
PTYCHOMNION ACICULARE		+				+	+											
CRASPEOIA GLAUCA																		
OAVIESIA ULICIFOLIA		+				+												